

DDWRT Wireless Bridge (Station (Client) bridge and Repeater Bridge)

Introduction

Station Bridge is a kind of a hack and actually should be avoided if possible. Please pull a wire or use power line adapters and set up as a Wireless Access Point.

It can work on some combinations and maybe you have the lucky combo so if you still want to persevere read on.

Note: you need build 49289 or better

If you need a wireless solution where you want routers on the same subnet preferably use WDS which is a real bridge (or its successor Mesh 802.11s), however WDS has no uniform implementation and is vendor and chipset specific, so it works only on select *non* Broadcom routers which are using the same exact chipset.

Do not confuse Station Bridge with Station mode. Station mode will use one of the radio's as **WAN**, so the router is on its own subnet, this is considered a more robust solution but having separate subnets has its own drawbacks.

Note: although the setup for Broadcom and Atheros is more or less the same the bridge implementation is different (and therefore they sometimes behave different).

Station Bridge (Broadcom proprietary [WET](#)) works as a transparent arp relay (with caveats). Station Bridge Routed is in fact a routing hack to simulate a bridge using relayd.

For an overview see: <https://oldwiki.archive.openwrt.org/doc/howto/clientmode>

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Equipment used for testing

Main R7800 build 49289

LAN 192.168.0.1/24

Wireless Bridge Broadcom Arm Netgear R6400v2, build 49273

Wireless Bridge Atheros NetGear R7800, build 49289

PC attached wired

Reset to Defaults

1. Always begin with resetting to defaults either from the GUI, or hitting the reset button or from CLI:
`nvrn erase && reboot`
2. Login at 192.168.1.1
3. Set username and Password
4. Put other settings in manually, never restore from a backup (to different build).

Set up page

1. Disable WAN
2. Set Router name
3. Disable Shortcut Forwarding Engine
4. Set Local IP address in subnet of main router and outside DHCP scope e.g. 192.168.0.13/24
5. Set Gateway AND Local DNS to main router i.e. 192.168.0.1
6. Disable DHCP (do **not** set as Forwarder)
7. SAVE do NOT Apply, check if all settings are saved!

WAN Setup

WAN Connection Type

Connection Type

Disabled



Optional Settings

Router Name

R6400v2



Hostname

Domain Name

MTU

Auto

1500

Shortcut Forwarding Engine

Enable Disable

STP

Enable Disable

Network Setup

Router IP

Local IP Address

192 . 168 . 0 . 13 / 24

Gateway

192 . 168 . 0 . 1

Local DNS

192 . 168 . 0 . 1

Dynamic Host Configuration Protocol (DHCP)

DHCP Type

DHCP Server



DHCP Server

Enable Disable

Start IP Address

192 . 168 . 1 . 64

Maximum DHCP Users

190

Lease Expiration

1440 min

Static DNS 1

0 . 0 . 0 . 0

Static DNS 2

0 . 0 . 0 . 0

Static DNS 3

0 . 0 . 0 . 0

WINS

0 . 0 . 0 . 0

Use dnsmasq for DNS



DHCP-Authoritative



Recursive DNS Resolving (Unbound)



Forced DNS Redirection



Forced DNS Redirection DoT



NTP Client Settings

Enable Client

Enable Disable

Time Zone

Europe/Berlin



Server IP / Name

Leave blank for automated resolution

Update Interval

3600 seconds

(Default: 3600, Range: 3600 - 604800)

Wireless Page

Set 2.4 GHz (which is used as backhaul) to Station Bridge.

Set same Network Mode and SSID as Main wireless

Setting same Channel and Channel width, as main wireless is probably not necessary but does not hurt

Disable U-APSD (Automatic Power Save) (Atheros Only)

Sensitivity Range/Ack timing : 1350

SAVE do not Apply

Broadcom:

Physical Interface wl0 - SSID [Ls24_6] HWAddr [CC:40:D0:62:F6:3C]

Radio Mode	Station Bridge	
Network Mode	N / G Mixed	
Service Set Identifier (SSID)	Ls24_6	
Channel	6 - 2.437 GHz	
Channel Width	Wide HT40 (40 MHz)	
Extension Channel	upper	
SSID Broadcast	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Dynamic WDS Mode	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Sensitivity Range / ACK Timing	1350	(Default: 500 meters)
Web UI Access	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Multicast to Unicast	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Network Configuration	<input checked="" type="radio"/> Bridged <input type="radio"/> Unbridged	

Buttons:

Atheros:

Physical Interface wlan1 - SSID [Ls24_6] HWAddr [BC:A5:11:3E:71:F4]

Radio Mode	Station Bridge (Routed)
Default GW Mode	<input checked="" type="radio"/> Auto (DHCP) <input type="radio"/> Manual
Network Mode	N / G Mixed
Channel Width	Wide HT40 (40 MHz)
TurboQAM (QAM256)	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Service Set Identifier (SSID)	Ls24_6
Advanced Settings	<input type="checkbox"/>
Radio Time Restrictions	
Radio Scheduling	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

Buttons:

Set 5 GHZ to your Liking as this is used to connect to your bridge, the 2.4 GHz is only backhaul.

You can reverse this if you want and use the 5 GHz as backhaul.

If you also want to use the backhaul to do double duty as Access Point then for Atheros/Marvell/Ralink you can simply add a VAP, for Broadcom use Repeater bridge instead of Station Bridge

[See below](#)

Wireless security

Set to same security mode/algorithm (but you should use WPA2-PSK / CCMP-128 (AES)) and Security key as Main

Security Mode	WPA2-PSK
WPA Algorithms	CCMP-128 (AES)
WPA Shared Key	••••••••  <input type="checkbox"/> Unmask
Key Renewal Interval	3600 seconds

Services Page

Enable Syslog

Optional:

Disable ttraff Daemon

Enable SSHD

SAVE do not Apply

After you are done and have checked the settings go to Administration page and hit the REBOOT button at the bottom of the page

Security > Firewall Page

Disable/uncheck: ARP spoofing protection

Check from command line that it is disabled:

nvrpm show | grep arp_spoofing and cat /proc/net/arp_spoofing_enable

It should be 0 (meaning disabled)

Settings I do not change but which are in the [wiki](#)

- I do **not change the Operating mode** from Gateway to Router mode. Actually there is hardly any reason to do that at all. Either it does not matter (in this case) or it can even hamper functionality.
(There is one legitimate case where it is mildly useful though 😊)
- I do **not change the Firewall settings** although you do not want a firewall, the Firewall is automatically disabled as there is no WAN, but it does not hurt to follow the wiki and Disable the Firewall anyway.

Backhaul using 5 GHz

I also tested with 5 GHz as back haul on Broadcom , this also worked, I did not test making of a VAP, but I can connect to 2.4 GHz and have access to internet and main router.

Repeater Bridge

This is for Broadcom only, Other Routers can just add a VAP when using Station Bridge!

If you also want the backhaul radio to do double duty then choose Repeater Bridge instead of Station Bridge.

You can now add a VAP after Save and Apply, do not forget to set Wireless security

Physical Interface wl0 - SSID [Ls24_6] HWAddr [CC:40:D0:62:F6:3C]

Radio Mode	Repeater Bridge	
Network Mode	N / G Mixed	
Service Set Identifier (SSID)	Ls24_6	
Sensitivity Range / ACK Timing	1350	(Default: 500)
Web UI Access	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	
Multicast to Unicast	<input type="radio"/> Enable <input checked="" type="radio"/> Disable	
Network Configuration	<input checked="" type="radio"/> Bridged <input type="radio"/> Unbridged	

Virtual Interfaces

Virtual Interfaces wl0.1 SSID [dd-wrt_vap_2-24] HWAddr [CC:40:D0:62:F6:3C]

Service Set Identifier (SSID)	dd-wrt_vap_2-24
SSID Broadcast	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Web UI Access	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Multicast to Unicast	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Network Configuration	<input checked="" type="radio"/> Bridged <input type="radio"/> Unbridged
AP Isolation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

Add Virtual AP

Virtual Interfaces wl0.1 SSID [dd-wrt_vap_2-24] HWAddr [CC:40:D0:62:F6:3C]

Security Mode	WPA2-PSK
WPA Algorithms	CCMP-128 (AES)
WPA Shared Key	••••••••
Key Renewal Interval	3600 seconds

Unbridged Virtual Access Point

When you create an unbridged virtual access point (ATM I can only get it working on Broadcom) follow the rules for creating an Unbridged VAP on a WAP! (e.g. NAT traffic out of br0)

Conclusion

Station Bridge on Broadcom seems to work well.

On Atheros/Qualcomm (it is a different implementation that is why it is called Station Bridge (Routed)) it is somewhat problematic in my hands.

Troubleshooting

Wireless settings

One of the things that can go wrong is if the wireless settings are not compatible between Main and Wireless Client

So start simple with 20 MHz channel width and always the same Network mode.

Use always WPA2-PSK with CCMP-128-AES.

But even then there are rumours that a DDWRT station will not always connect with routers with other (stock) software.

Be patient

It can take some minutes before the router is restarted and made a connection so be patient

Reboot a second time if NTP time is not working

As Station bridge is a hack there still seems some spooky things, after setup an Atheros R7800 as Station Bridge, everything seems to work except the NTP on my router, only after a second reboot this started working

Cannot reach your Station Bridge from main

On Atheros this seems a problem with the arp cache on your PC so just reboot your PC or from an elevated command prompt delete the arp cache: *arp -d*

On Broadcom you have to populate the arp cache by starting a connection from the bridged router so that the arp cache is filled or add an entry manually but even then communication from main to bridge part is often **not working** wired but it is working wireless from the same interface, so connected wirelessly on main to the same interface as the station bridge does work.

VAP does not start after reboot

It sometimes happens that the VAP dos not work after a reboot but only after pressing Apply on the wireless page. This can happen if the VAP starts before there is upstream connection to mitigate this add in Administration > Commands > Save as startup:

#Fix broken VAP on Repeater Mode

sleep 10;

service lan restart

sleep 45;

service wan_boot start

If all else fails

Power down the router and while powering up chant these magic words 10 times out aloud:

Connectum sine Filum

To be researched

1. Should you disable the firewall except Filter multicast as the wiki says?
I would think not as the firewall is automatically disabled because the WAN is disabled
2. Should you disable (untick) *Use dnsmasq for DNS and DHCP Authoritative* on Setup page?
Maybe you should, although it seems to work anyway
3. On Atheros an unbridged VAP is problematic at least in my hands, let me know if you get it working (and how 😊). Note it might be related to relayd not routing the newly created unbridged interface?